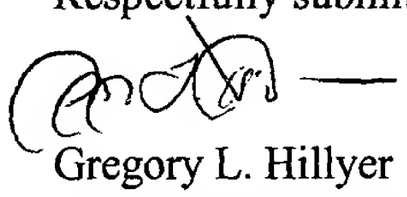
Applicants submit that the foregoing constitutes a full and complete response to the Office Action of record, and that the pending claims are in condition for ready allowance. An early Office Action to that effect is, therefore, earnestly solicited.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

Respectfully submitted,



Gregory L. Hillyer
Registration No. 44,154

Date: September 19, 2001
WOODCOCK WASHBURN KURTZ
MACKIEWICZ & NORRIS LLP
One Liberty Place - 46th Floor
Philadelphia, PA 19103
(215) 568-3100

have been amended. Claims 19, 22, 28, 29, 30, 35, 36, 37, 42, 43, 44, 49, 50, and 51 have been canceled. No claims have been added.

Applicants would like to thank Examiner Larson for his helpful discussion on September 14, 2001 in connection with this application. Pursuant to that discussion, it is Applicants' understanding that claims wherein the lipophilic groups recited for variables R^i and R^j are alkyl, lipids, and steriods are allowable over the rejections under 35 U.S.C. §§ 102 and 103 maintained in the Final Office Action mailed February 27, 2001.[1] Although Applicants believe that there is no valid basis for rejecting claims that embody additional lipophilic groups amendments have been made and claims have been canceled which Applicants believe render these rejections moot. Thus, Applicants respectfully request withdrawal of the rejections under §102 and § 103.

Claims 23, 24, and 39-52 were also rejected in the Final Office Action mailed February 27, 2001 under 35 U.S.C. § 112, first paragraph, for alleged lack of enablement. Although Applicants believe that one of ordinary skill in the art would be able to practice the full scope of these claims, certain amendments have been made to further prosecution. In this regard, the term "pharmaceutical" has been deleted from the preamble of claims 23 and 24, and the phrase "treating an animal" has been replaced with the phrase "modulating gene expression in an animal" in claims 39 and 46. In view of these amendments, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §112, first paragraph.

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[1] Specifically, claims 15-17, 25, 26, and 31 were rejected as allegedly being unpatentable over the disclosure of Thomson et al., WO 93/12129.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In The Claims:

Claims 19, 22, 28, 29, 30, 35, 36, 37, 42, 43, 44, 49, 50, and 51 have been canceled.

Claims 15, 21, 23, 24, 25, 32, 39, and 46 have been amended as follows.

15. A method of modulating cellular uptake and distribution of a peptide nucleic acid comprising the steps of:

(a) derivatizing a backbone position of said peptide nucleic acid; and

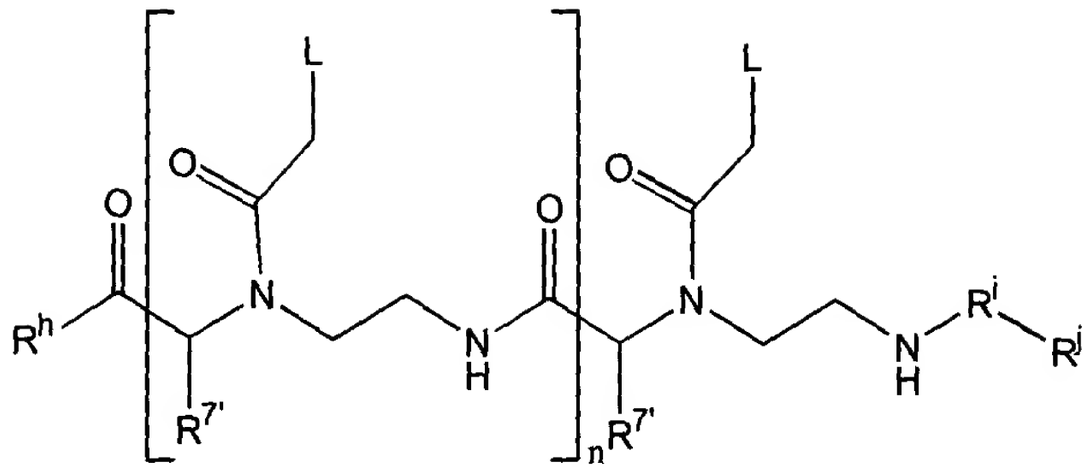
(b) conjugating the derivatized peptide nucleic acid of step (a) with a [lipophilic] group selected from alkyl, lipid, and steroid.

21. A method of modulating cellular uptake and distribution of a peptide nucleic acid comprising the steps of:

(a) conjugating said peptide nucleic acid with a [lipophilic] group selected from alkyl, lipid, and steroid; and

(b) introducing the conjugated peptide nucleic acid of step (a) into liposomes.

23. A [pharmaceutical] composition comprising [the peptide nucleic acid according to claim 1] a peptide nucleic acid having formula:



wherein:

each L is, independently, a naturally-occurring nucleobase or a non-naturally-occurring nucleobase;

each $R^{7'}$ is hydrogen or the side chain of a naturally-occurring or non-naturally-occurring amino acid, at least one $R^{7'}$ being the side chain of a naturally-occurring or non-naturally-occurring amino acid;

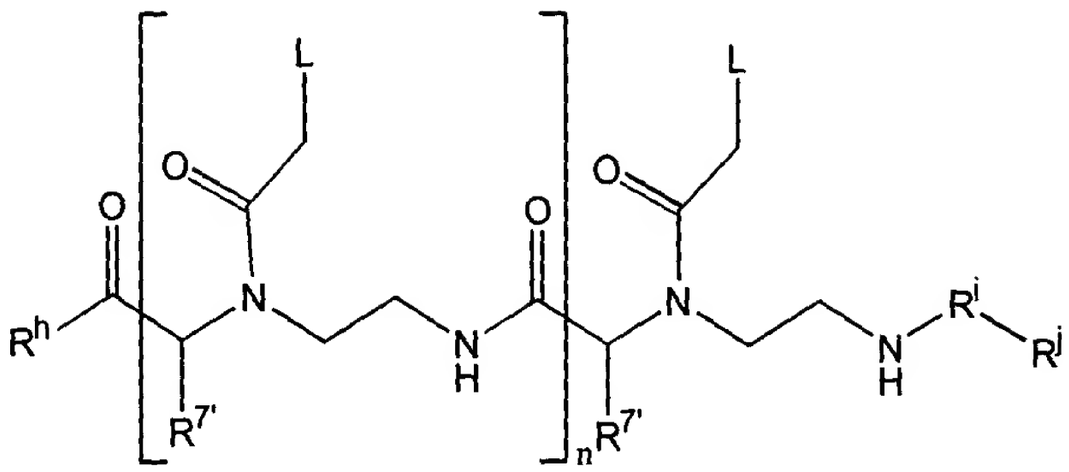
R^h is OH, NH_2, or $NHLysNH_2$;

each of R^i and R^j is, independently, a group selected from alkyl, lipid, and steroid; or R^i and R^j, together, are a group selected from alkyl, lipid and steroid; and

n is an integer from 1 to 30;

and at least one pharmaceutically acceptable carrier, binder, thickener, diluent, buffer, preservative or surface active agent.

24. A [pharmaceutical] composition comprising [the composition of claim 8] a peptide nucleic acid incorporated into a liposome, said peptide nucleic acid having formula:



wherein:

each L is, independently, a naturally-occurring nucleobase or a non-naturally-occurring nucleobase;

each $R^{7'}$ is hydrogen or the side chain of a naturally-occurring or non-naturally-occurring amino acid;

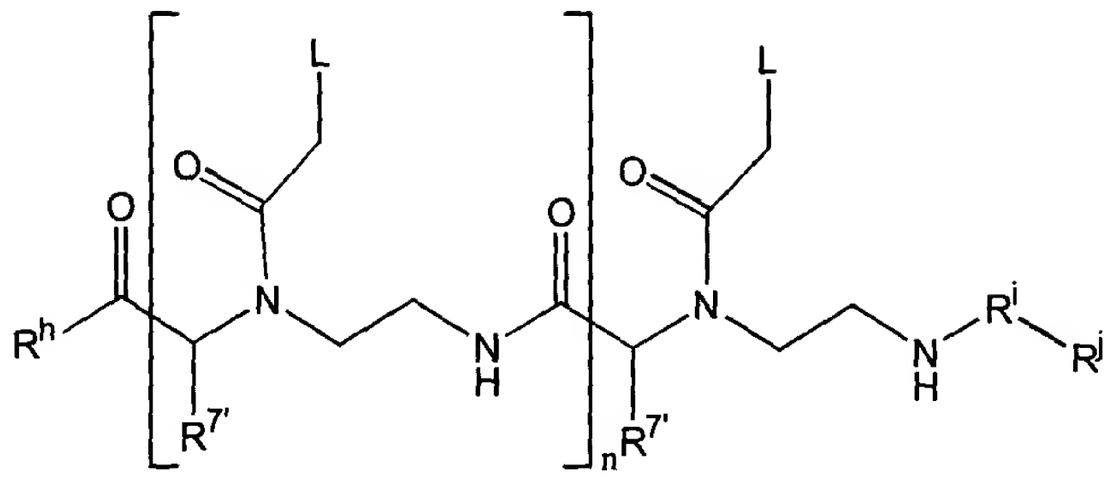
R^h is OH, NH_2, or $NHLysNH_2$;

each of R^i and R^j is, independently, a group selected from alkyl, lipid, and steroid; or R^i and R^j, together, are a group selected from alkyl, lipid and steroid; and

n is an integer from 1 to 30;

and at least one pharmaceutically acceptable carrier, binder, thickener, diluent, buffer, preservative or surface active agent.

25. A method of modulating cellular uptake and distribution of a peptide nucleic acid in a cell or tissue comprising administering to the cell or tissue a peptide nucleic acid having formula:



wherein:

each L is, independently, a naturally-occurring nucleobase or a non-naturally-occurring nucleobase;

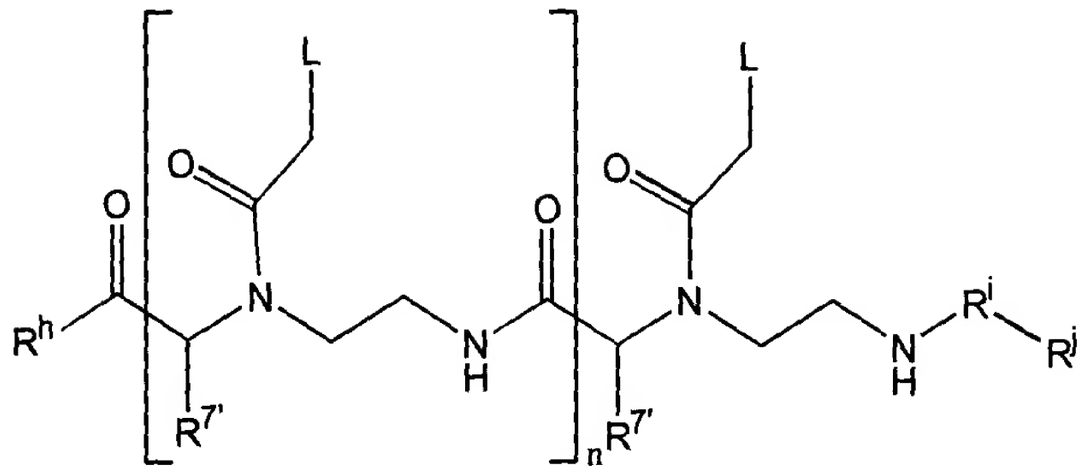
each $R^{7'}$ is hydrogen or the side chain of a naturally-occurring or non-naturally-occurring amino acid, at least one $R^{7'}$ being the side chain of a naturally-occurring or non-naturally-occurring amino acid;

R^h is OH, NH_2, or $NHLysNH_2$;

each of R^i and R^j is, independently, a [lipophilic] group selected from alkyl, lipid, and steroid [or an amino acid labeled with a fluorescent group]; or R^i and R^j, together, are a [lipophilic] group selected from alkyl, lipid, and steroid; and

n is an integer from 1 to 30.

32. A method of modulating cellular uptake and distribution of a peptide nucleic acid in a cell or tissue comprising administering to the cell or tissue a composition comprising a peptide nucleic acid incorporated into a liposome, said peptide nucleic acid having formula:



wherein:

each L is, independently, a naturally-occurring nucleobase or a non-naturally-occurring nucleobase;

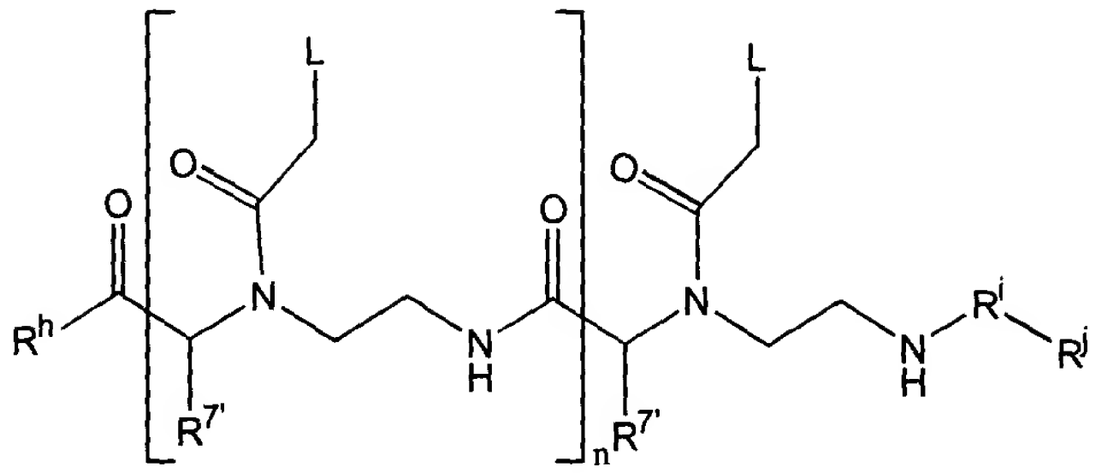
each $R^{7'}$ is hydrogen or the side chain of a naturally-occurring or non-naturally-occurring amino acid;

R^h is OH, NH_2, or $NHLysNH_2$;

each of R^i and R^j is, independently, a [lipophilic] group selected from alkyl, lipid, and steroid [or an amino acid labeled with a fluorescent group]; or R^i and R^j, together, are a [lipophilic] group selected from alkyl, lipid, and steroid; and

n is an integer from 1 to 30.

39. A method of [treating] modulating gene expression in an animal comprising administering to the animal a therapeutically effective amount of a peptide nucleic acid of formula:



wherein:

each L is, independently, a naturally-occurring nucleobase or a non-naturally-occurring nucleobase;

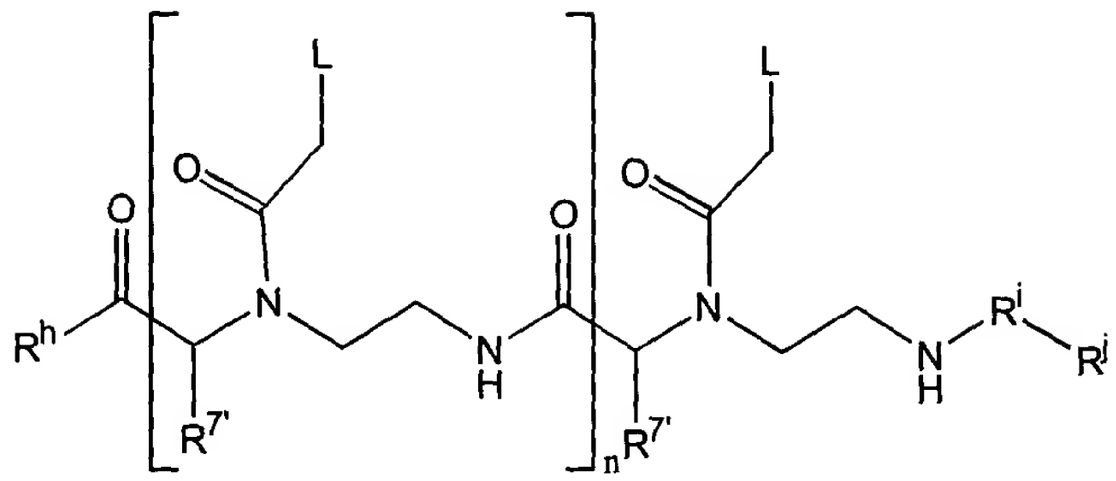
each $R^{7'}$ is hydrogen or the side chain of a naturally-occurring or non-naturally-occurring amino acid, at least one $R^{7'}$ being the side chain of a naturally-occurring or non-naturally-occurring amino acid;

R^h is OH, NH_2, or $NHLysNH_2$;

each of R^i and R^j is, independently, a [lipophilic] group selected from alkyl, lipid, and steroid [or an amino acid labeled with a fluorescent group]; or R^i and R^j, together, are a [lipophilic] group selected from alkyl, lipid, and steroid; and

n is an integer from 1 to 30.

46. A method of [treating] modulating gene expression in an animal comprising administering to the animal a therapeutically effective amount of a composition comprising a peptide nucleic acid incorporated into a liposome, said peptide nucleic acid having formula:



wherein:

each L is, independently, a naturally-occurring nucleobase or a non-naturally-occurring nucleobase;

each $R^{7'}$ is hydrogen or the side chain of a naturally-occurring or non-naturally-occurring amino acid;

R^h is OH, NH_2, or $NHLysNH_2$;

each of R^i and R^j is, independently, a [lipophilic] group selected from alkyl, lipid, and steroid [or an amino acid labeled with a fluorescent group]; or R^i and R^j, together, are a [lipophilic] group selected from alkyl, lipid, and steroid; and

n is an integer from 1 to 30.